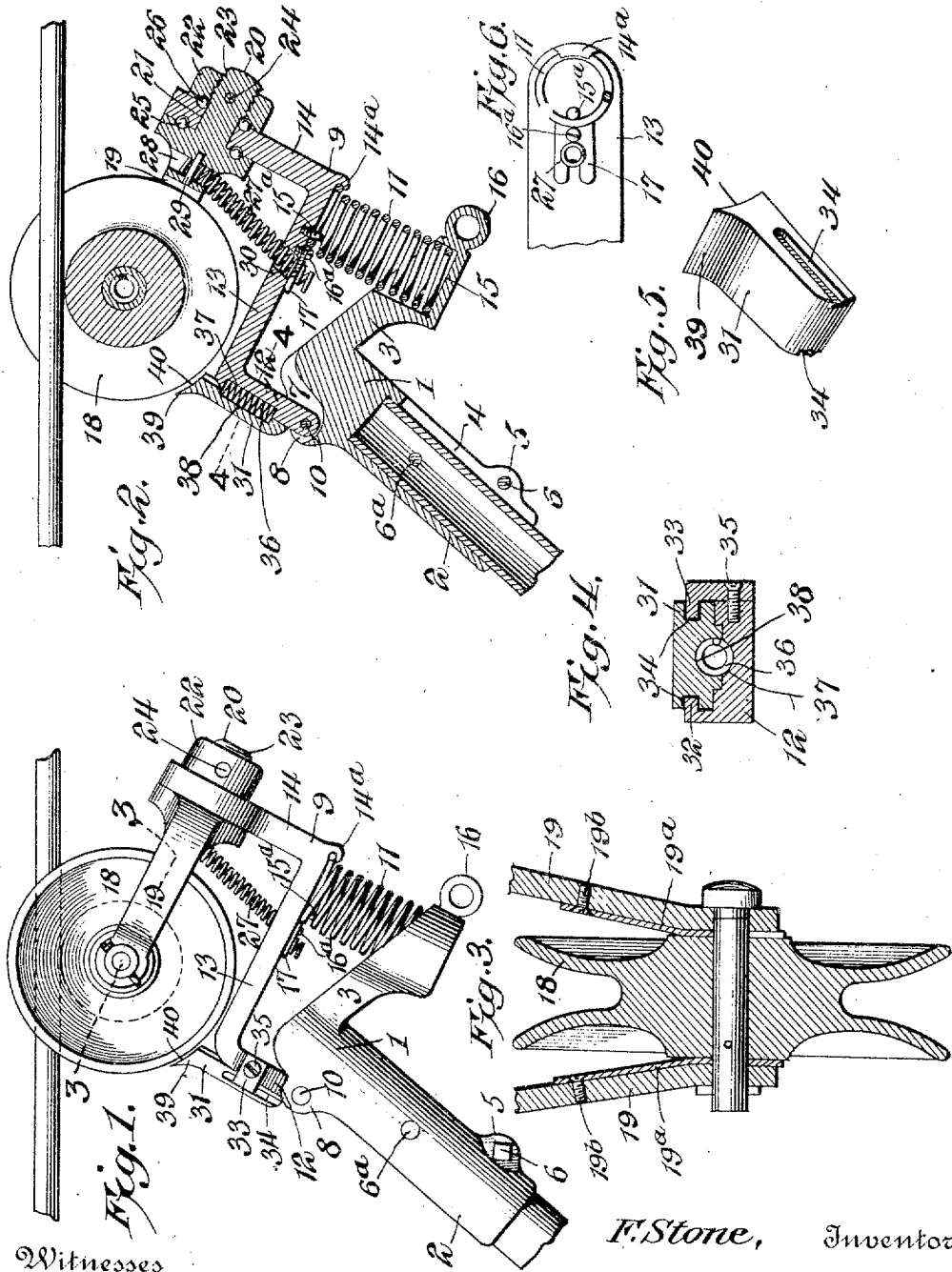


986,240.

Patented Mar. 7, 1911.



Witnesses

Howard D. Orr.
H. J. Riley

F. Stone, Inventor,

By

C. G. Siggers

Attorney

UNITED STATES PATENT OFFICE.

FRANK STONE, OF BRADFORD, PENNSYLVANIA.

TROLLEY.

986,240.

Specification of Letters Patent.

Patented Mar. 7, 1911.

Application filed June 9, 1909. Serial No. 501,048.

To all whom it may concern:

Be it known that I, FRANK STONE, a citizen of the United States, residing at Bradford, in the county of McKean and State of Pennsylvania, have invented a new and useful Trolley, of which the following is a specification.

The invention relates to improvements in trolleys for electric railways.

The object of the present invention is to improve the construction of trolleys, and to provide a simple, inexpensive and efficient device of great strength and durability, adapted to be readily applied to a trolley pole as an attachment, and capable of preventing the trolley wheel from leaving the trolley wire and of reducing the wear to a minimum.

Another object of the invention is to provide a guard, adapted to be arranged close to the trolley wheel to protect the same from cross wires, and capable of yielding outwardly so as not to interfere with the free movement of the trolley wheel.

With these and other objects in view, the invention consists in the construction and novel combination of parts hereinafter fully described, illustrated in the accompanying drawing, and pointed out in the claims here-to appended: it being understood that various changes in the form, proportion, size and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawing:—Figure 1 is a side elevation of a trolley pole attachment, constructed in accordance with this invention. Fig. 2 is a longitudinal sectional view of the same. Fig. 3 is a transverse sectional view, taken substantially on the line 3—3 of Fig. 1. Fig. 4 is a detail sectional view on the line 4—4 of Fig. 2. Fig. 5 is a detail view of the yieldably mounted guard. Fig. 6 is a detail view, illustrating the construction of the forked spring engaging plate.

Like numerals of reference designate corresponding parts in all the figures of the drawing.

The attachment, which is adapted to be applied to an ordinary trolley pole by cutting off an inch or two of the upper end thereof to secure the proper length of the trolley, comprises in its construction a trol-

ley head 1, composed of a tubular socket 2 and a rearwardly extending supporting arm 3, preferably formed integral with the socket and arranged at the upper end thereof. The socket 2 is split longitudinally at the rear side at 4 to form a yieldable clamp, and it is provided at opposite sides of the split portion with ears 5 receiving a clamping screw 6. The perforation of one of the ears 5 is threaded to engage with the threads of the screw, and the latter is adapted to draw the opposite sides of the socket tightly into frictional engagement with the trolley pole. The socket and the pole are preferably pierced by a transverse bolt or pin 6^a to prevent the socket from turning on the pole. The trolley head is provided at the front of its upper end with a recess 7, forming side flanges or walls 8 and receiving a bracket 9, which is pivoted in the recess by a pin 10, or other suitable fastening device, piercing the walls 8 and the lower end of the bracket.

The bracket, which is adapted to swing upward and downward, is yieldably supported by a coiled spring 11, and it is of angular form being composed of a lower straight stem 12, a rearwardly extending intermediate portion 13 and an upwardly projecting arm 14. The stem and the arm extend in opposite directions from the intermediate connecting portion 13, and are disposed at approximately right angles to the same. The intermediate portion 13 and the arm 14 provide an approximately L-shaped upper portion to the bracket. The arm 3 of the trolley head is recessed to provide a cylindrical seat 15 for the coiled spring, and it has a terminal eye 16 for the attachment of a cord or rope. The upper end of the spring is suitably secured to the lower face of the intermediate connecting portion of the bracket by means of an outer integral hook-shaped lug 14^a, an inner projection 15^a, and a screw 16^a, which also secures a plate 17 to the lower face of the connecting portion of the bracket. The hook-shaped lug partially embraces the upper coil of the supporting spring 11, and the screw 16^a maintains the upper coil in such engagement. The spring by yieldably supporting the pivotally mounted bracket, cooperates with the head and the bracket to form an extensible trolley attachment, which maintains the trolley wheel 18 in engagement with the trolley wire, and through the yielding and extensible character of the attach-

ment, the trolley wheel is prevented from jumping off the wire.

The trolley wheel is suitably mounted within a fork or yoke 19, which is provided with a stem or pivot 20, extending through an opening 21 of the arm of the bracket and secured to the latter by a nut 22, arranged on a threaded portion 23 of the stem and held against rotation by a pin or key 24. The pin or key pierces the nut and the stem, but any other suitable means may be employed for locking the nut against rotation. The sides or arms of the fork or yoke 19 are equipped at their inner faces with suitable contact plates 19^a, attached at their upper ends to the sides or arms of the fork or yoke by screws 19^b, or other suitable fastening means. The arm 14 of the bracket is provided at its front and rear faces with annular grooves corresponding with annular grooves of the base of the fork and the inner face of the nut and forming ball races for the reception of anti-friction balls 25 and 26. By means of the upper and lower base bearings thus formed the fork is permitted to turn freely in any direction, thereby reducing to a minimum the wear on the trolley wheel and correspondingly increasing the life of the latter. The fork is yieldably centered by means of a coiled spring 27, extending from the base of the fork to the intermediate connecting portion of the bracket. The upper or outer end of the centering spring is secured in an opening 28 of the fork by means of a pin 29, or other suitable fastening device, and the inner or lower end of the centering spring extends through an opening 30 of the connecting portion of the bracket and is engaged by the plate 17, which is bifurcated or forked to straddle and engage the coils of the spring 27. The spring 27 is adapted to be drawn through the opening 30 and the bifurcated plate forms an adjustable connection for varying the tension of the centering spring. The spring yieldably maintains the fork in a central position with relation to the bracket and the trolley head and while it permits the fork to readily turn to accommodate the device to the movements of the trolley wheel, it will return the latter to its central position, when the same is free to move.

The attachment is equipped with a yieldably mounted guard 31, arranged on and extending longitudinally of the stem 12 of the bracket, and slidable between guides 32 and 33, which have inwardly projecting flanges engaging grooves 34 in the sides of the guard. The guide 32 is preferably formed integral with the bracket, while the other guide 33 is detachable, consisting of a plate, which is secured by a screw 35, or other suitable fastening device to the adjacent side edge of the stem of the bracket.

The grooves and the guide permit the guard to move inward, and it is yieldably maintained adjacent to the latter by a coiled spring 36, interposed between the bracket and the guard and arranged within corresponding recesses 37 and 38 of the same. The guard is provided at its upper end or head with an upwardly projecting lip 39, and the upper edge or face 40 is curved concentric with the trolley wheel and is adapted to be engaged by the same, when the trolley wheel turns on the stem or pivot of the fork. The coiled spring, which is housed in the said recesses 37 and 38 yields and permits this inward and outward movement of the guard, which is adapted to prevent a cross wire from forcing itself between the trolley wheel and the bracket.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. An attachment for trolley poles including a trolley head, a bracket pivotally connected with the trolley head and normally arranged to swing upward and downward toward and from the trolley head, a spring for urging the bracket upwardly, a trolley wheel-receiving fork mounted on the bracket and arranged at an inclination to the trolley wire when the trolley is in engagement with the same, said trolley wheel-receiving fork having an axial rotary movement, and another spring connected with the fork and with the bracket for maintaining a trolley wheel in alinement with the trolley wire.
2. An attachment for trolley poles including a trolley head having a rearwardly extending arm provided with a seat, a bracket pivotally connected with the trolley head and extending rearwardly above the arm, a coiled spring arranged in the seat and supporting the bracket and adapted to urge the same upwardly, an approximately hook-shaped lug carried by the bracket and engaging the coiled spring at one side thereof, means carried by the bracket and located at the opposite side of the spring and co-operating with the said lug for securing the spring to the bracket, and a trolley wheel-receiving fork mounted on the bracket.
3. An attachment for trolley poles including a bracket having an opening, a fork pivotally mounted on the bracket in spaced relation with the opening and adapted to receive the trolley wheel, a spring connected at one end with the fork and having its other end extending through the opening, and a bifurcated plate mounted on the bracket and adjustably engaging the spring.
4. An attachment for trolley poles including a trolley head, a bracket pivoted in the trolley head and provided with a lug and having an opening arranged in spaced relation with the lug, a coiled spring interposed between the trolley head and the bracket and engaged

at one side by the said lug, a fork pivotally mounted on the bracket and adapted to receive the trolley wheel, a spring connected with the fork and extending through the opening of the bracket, a plate engaging the last-mentioned spring at the opening of the bracket, and a fastening device securing the plate to the bracket and maintaining the first-mentioned spring in engagement with the lug.

5. An attachment for trolley poles including a trolley head having a rearwardly extending arm, a bracket pivoted to the trolley head in advance of the rearwardly extending arm and having a substantially L-shaped portion located above the same and forming an upwardly projecting arm, a spring interposed between the rearwardly extending arm of the head and the bracket for urging the latter upwardly, a trolley wheel-receiving fork mounted on the upwardly projecting arm of the bracket and arranged at an inclination to the trolley wire when the trolley is in engagement with the same and having an axial rotary movement, and another spring connected with the fork and with the bracket for maintaining a trolley wheel in alinement with the trolley wire.

6. An attachment for trolley poles including a bracket, a fork pivotally mounted on the bracket and adapted to receive a trolley wheel, a movably mounted guard arranged at the bottom of the trolley wheel in advance of the same to protect the trolley wheel from cross wires, and means for yieldably urging the guard outwardly for cushioning the same.

7. An attachment for trolley poles including a bracket, a fork mounted on the bracket and arranged to receive a trolley wheel, a guard slidably mounted on the bracket at the bottom of the trolley wheel, said guard and bracket having corresponding recesses, and a coiled spring housed in the recess and yieldably maintaining the guard in position with relation to the trolley wheel.

8. An attachment for trolley poles including a trolley wheel, a support for the same provided with opposite guides, a guard for the trolley wheel slidable along the guides, said guard and support having contiguous faces provided with corresponding recesses, and a spring concealed within the recesses of the guard and the support for yieldably maintaining the support in position with relation to the trolley wheel.

9. An attachment for trolley poles including a trolley wheel, a support for the same provided with opposite guides having inwardly projecting portions, one of the guides consisting of a detachable plate, a guard provided with opposite grooves and receiving the projecting portions of the guides and slidable between the same, and means for yieldably holding the guard in position with relation to the wheel.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

FRANK STONE.

Witnesses:

THARESSA RATZ,
FRANK HASTINGS.